

Extracellular enzyme production of Probiotic *Bacillus* JAQ04 and *Micrococcus* JAQ07 isolated from tiger grouper (*Epinephelus fuscoguttatus*)

ABSTRACT

Tiger grouper has been identified as a good market price and most desired in the live fish trade market species especially in Southeast Asia region. However, intensive grouper aquaculture often triggering diseases by bacteria pathogen that leads to infectious diseases. Thus, to hinder this infectious disease, promising probiotic bacteria successfully isolated from intestine Tiger grouper juvenile. Previous studies showed that this bacterium has been shown to produce antibacterial activity against pathogenic marine bacteria *Vibrio alginolyticus*. Thus, this study aims to further identify the characteristic of Probiotic *Bacillus* JAQ04 and *Micrococcus* JAQ07 in-vitro. In this study the bacteria were screened for their extracellular enzyme production of protease, amylase and lipase. These bacteria may play a role in inhibiting the pathogen by production of extracellular enzyme and improve the feed digestion. The enzymes were shown positive for protease, amylase and lipase which exhibit the clear zone on skim milk agar, starch agar and spirit blue agar. However, in vivo study needs to be done to further confirm the enzymatic activity of the isolates in inhibiting of pathogen and improve feed digestion.

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Keyword: Amylase; *Bacillus*; *Micrococcus*; Lipase; Protease